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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/937,129 | 09/20/2001 | Osamu Yamaguchi | 13409.6USWO | 6292 |

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[REDACTED] EXAMINER

SAVAGE, MATTHEW O

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| | 1723 |

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/937,129 | YAMAGUCHI ET AL. |
| Examiner | Art Unit | |
| Matthew O Savage | 1723 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 27 March 2003.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 6-12, 15-20, 24-27 and 29 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5, 13, 14, 21-23 and 28 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some *
 - c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 . | 6) <input type="checkbox"/> Other: _____ . |

Applicant's election with traverse of species C3, S5, SB1, F1, and FB1 in Paper No. 6 is acknowledged. The statement that claims 1, 2, 5, 6, 8, and 11 correspond with the species as set forth in paper #6 is noted and agreed with. Accordingly claims 1-5, 13, 14, 21-23, and 28 read upon the elected species and will be examined. The remaining claims have been withdrawn as being directed to non-elected species.

With respect to the IDS filed on 2-12-02, paper #4, JP 63-15004 was not considered since the reference failed to include any abstract or drawing Figures and because no concise explanation of the relevance of the reference to the instant application had been provided. JP 2815/1993 and JP 168443/1985 had not been considered since copies of the references could not be located in the instant or related applications.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 13, 14, 21-23, and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to lines 1-4 of claim 1, it is unclear as to whether the fibers that make up the strips are bonded, or bonded in a twill form, or if the strip is bonded to itself in a twill form. On line 3, "the fiber intersections" lack antecedent basis. In addition, it is unclear as to which fiber intersections are being referred to, i.e., internally of the strip, or

exterior fibers of one portion of the strip that contact and intersect exterior fibers of an overlapping portion of the strip. Concerning lines 4-7, it is unclear as to whether or not the first and second filtration layers include the strip of nonwoven recited on lines 1-2.

With respect to lines 1-4 of claim 13, it is unclear as to whether the fibers that make up the strips are bonded, or bonded in a twill form, or if the strip is bonded to itself in a twill form.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of EP 313,920.

With respect to claim 1, as best understood, JP 5-2715 discloses a strip of nonwoven including a thermoplastic fiber obtained by bonding the fiber intersections, and arranging the strips to form a cylindrical form, a filtration layer including a first filtration layer 4 and a second filtration layer 3 including a filament nonwoven. JP '715 fails to specify the strip as being arranged in a twill form. EP '920 discloses the concept of winding a filter media in a twill form (see FIG. 3) and suggests that such a configuration prevents deformation of the media due to fluid pressure thereby enabling efficient removal of particles (see lines 25-33 of col. 6). It would have been obvious to have modified the '715 filter so as to have included the twill configuration as suggested

by '920 in order to increase the filtration efficiency of the apparatus. '715 discloses a second filtration layer capable of removing particles of a smaller diameter than the first filtration layer since the fibers of the second layer are finer than the fibers of the first layer. '715 fails to specify the initial 80% trapped particle diameter in the second filtration layer as being .05-.9 times as large as an initial 80% trapped particle diameter in the first filtration layer, however, such a modification would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

Concerning claim 2, '920 discloses a strip of non-woven turned into pleated matter having 4-50 pleats (see FIG.6).

As to claim 3, '920 discloses part of the pleats being arranged in a non-parallel manner (e.g., the adjacent sides of each pleat being non-parallel to each other, see FIG. 5).

Concerning claims 4-5, '715 and '920 fail to specify the recited void rates, however, such modifications would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

Concerning claim 28, '715 and '920 fail to specify the recited strip width and product of the width and mass per unit area values, however, such a modification would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of EP 313,920 and EP 307,234.

With respect to claim 13, as best understood, JP 5-2715 discloses a strip of nonwoven including a thermoplastic fiber obtained by bonding the fiber intersections, and arranging the strips to form a cylindrical form around a perforated cylinder 2. JP '715 fails to specify the strip as being arranged in a twill form. EP '920 discloses the concept of winding a filter media in a twill form (see FIG. 3) and suggests that such a configuration prevents deformation of the media due to fluid pressure thereby enabling efficient removal of particles (see lines 25-33 of col. 6). It would have been obvious to have modified the '715 filter so as to have included the twill configuration as suggested by '920 in order to increase the filtration efficiency of the apparatus. '715 and '920 fail to specify end face sealed parts provided at both end parts. '234 discloses the concept of providing end face sealed parts 1 (see FIG. 2) at both end parts of an analogous filter element and suggests that a procedure is simple and efficient and eliminates the use of an adhesive (see lines 33-41 of page 2). It would have been obvious to have modified the combination suggested by '715 and '920 so as to have included end face sealed parts as suggested by '234 in order to provide an end sealing procedure that was simple and efficient and that eliminated the use of adhesives.

As to claim 14, '234 discloses end face parts sealed by melting (see from line 62 of page 2 to line 5 of page 3).

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of EP 313,920 as applied to claim 1, and further in view of EP 466,381.

With respect to claim 21, as best understood, '715 discloses a thermoplastic fiber being a thermally adherant composite fiber that includes a low melting point resin and a high melting point resins (see FIGS. 2 and 3). '715 fails the difference in melting points as being 10 degrees C or more. '381 discloses the concept of providing thermally adherant fibers having low and high melting point resins with the difference in melting points being greater than 10 degrees C (see lines 13-16 of col. 4) and suggests that such a procedure prevents collapsing of the high melting point resin component (see lines 16-19 of col. 4). It would have been obvious to have modified the combination suggested by '715 and '920 so as to have included a difference in melting points of 10 degrees C or more in order to prevent collapsing of the high melting point component.

Concerning claim 22, '381 discloses the combination of polyethylene and polypropylene (see lines 31-32 of col. 4). '381 fails to specify linear low density polyethylene, however, such a modification would have been obvious in order to optimize the difference in melting points between selected polyethylene and polypropylene resins.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of EP 313,920 as applied to claim 1 above, and further in view of U.S. Patent 5,721,180 to Pike et al and U.S. Patent 5,652,041 to Buerger et al.

'751, as best understood, and '920, fail to intersections that are bonded by thermal compression by means of a heat embossing roll. Pike et al '180 disclose that it is known bond fiber intersections of a filter media by thermal point bonding (see lines 31-33 of col. 6). Pike et al '180 suggest that such an arrangement increases the physical strength of the media. It would have been obvious to have modified the combination suggested by '715 and '920 so as to have included thermal point bonding as suggested by Pike et al '180 in order to increase the strength of the filter media. Pike et al '180 fails to specify thermal point bonding by utilizing a heat embossing roll. Buerger et al that is conventional to carry out thermal/point bonding with heated embossing/calender rolls (see lines 18-23 of col. 6). It would have been obvious to have modified the combination suggested by '715, '920, and Pike et al '180 so as to have included thermal point bonding carried out by heat embossing rolls as suggested by Buerger et al in order provide a stronger filter media formed by a conventional point bonding process.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O Savage whose telephone number is 703-308-3854. The examiner can normally be reached on Monday-Friday, 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda W. Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

M. Savage
Matthew O Savage
Primary Examiner
Art Unit 1723

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June 2, 2003